PCT09

RAW SEQUENCE LISTING DATE: 11/14/2001 PATENT APPLICATION: US/09/830,706 TIME: 14:12:30

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Output Set: N:\CRF3\11142001\I830706.raw

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4 <110> APPLICANT: TOJI, SHINGO
          YANO, MINORU
          TAMAI, KATSUYUKI
  6
  8 <120> TITLE OF INVENTION: THIOREDOXIN REDUCTASE II
 10 <130> FILE REFERENCE: 55865-71965
 12 <140> CURRENT APPLICATION NUMBER: 09/830,706
 13 <141> CURRENT FILING DATE: 2001-04-27
 15 <150> PRIOR APPLICATION NUMBER: PCT/JP99/05983
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=16 <151> PRIOR FILING DATE: 1999-10-28
18 <150> PRIOR APPLICATION NUMBER: JP 1998-310422
 19 <151> PRIOR FILING DATE: 1998-10-30
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23 <170> SOFTWARE: PatentIn Ver. 2.1
25 <210> SEQ ID NO: 1
~26 <211> LENGT∤: 1959
_27 <212> TYPE: \DNA⁄
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 48 gca gca ggt cag cgg gac tat gat ctc ctg gtg gtc ggc ggg gga tct
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 49 Ala Ala Gly Gln Arg Asp Tyr Asp Leu Leu Val Val Gly Gly Ser
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 52 ggt ggc ctg gct tgt gcc aag gag gcc gcc cag ctg gga agg aag gtg
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 53 Gly Gly Leu Ala Cys Ala Lys Glu Ala Ala Gln Leu Gly Arg Lys Val
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 56 gcc gtg gtg gac tac gtg gaa cet tet eee caa gge ace egg tgg gge
 57 Ala Val Val Asp Tyr Val Glu Pro Ser Pro Gln Gly Thr Arg Trp Gly
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 60 ctc ggc ggc acc tgc gtc aac gtg ggc tgc atc ccc-aag aag ctg atg
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 61 Leu Gly Gly Thr Cys Val Asn Val Gly Cys Ile Pro Lys Lys Leu Met
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 64 cac caq qcq qca ctq ctq qqa qqc ctg atc caa gat gcc ccc aac tat
 65 His Gln Ala Ala Leu Leu Gly Gly Leu Ile Gln Asp Ala Pro Asn Tyr
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                                                                   387
 68 ggc tgg gag gtg gcc cag ccc gtg ccg cat gac tgg agg aag atg gca
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DATE: 11/14/2001 RAW SEQUENCE LISTING PATENT APPLICATION: US/09/830,706 TIME: 14:12:30

Input Set : A:\55871965.app
Output Set: N:\CRF3\11142001\1830706.raw

| 69 70 | Gly | Trp | Glu | Val | Ala 115 | Gln | Pro | Val | Pro | His 120 | Asp | Trp | Arg | Lys | Met 125 | Ala | |
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| 72 | σaa | act | att | caa | aat | cac | a't.a | aaa | tcc | t.t.a | aac | taa | aac | cac | cat | atc | 435 |
| | | | | | | | | Lys | | | | | | | | | |
| | Giu | пти | vai | 130 | ASII | 1113 | VUI | цуз | 135 | пси | ASII | 115 | CIY | 140 | 1119 | • u i | |
| 74 | | | | | | | | | | | | | | | | | 400 |
| | | | | | | | | aag | | | | | | | | | 483 |
| 77 | Gln | Leu | GIn | Asp | Arg | Lys | Val | Lys | Tyr | Phe | Asn | IIe | Lys | Ala | Ser | Phe | |
| 78 | | | 145 | | | | | 150 | | | | | 155 | | | | |
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| 81 | Val | Asp | Glu | His | Thr | Val | Cys | Gly | Val | Ala | Lys | Gly | Gly | Lys | Glu | Ile | |
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| | _ | _ | | - | _ | | | Ile | | _ | | | | | _ | _ | 3,3 |
| | | Leu | ser | нта | _ | | TIE | TTE | тте | нта | | сту | GIA | AIG | PIO | _ | |
| <u>=</u> 86 | | | | | | 180 | | | | | 185 | | | | | 190 | |
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| ₩ 1 89 | Tyr | ${\tt Pro}$ | Thr | His | Ile | Glu | Gly | Ala | Leu | Glu | ${	t Tyr}$ | Gly | Ile | Thr | Ser | Asp | |
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| | | | | | | | | | | | | | | | | | |
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| 105 106 109 110 112 113 114 116 117 118 120 121 122 124 125 126 128 129 130 | Gln 255 cgg Arg ggc Gly acg Thr act Thr 335 atc Ile | tto Phe cag Gln ggc Gly aga Arg 320 cag Gln tac Tyr | Met ctg Leu ctg Leu acc Thr 305 agt Lys gcc Ala | agg Arg cag Gln 290 ttt Phe ctg Leu atc Ile att | ggc Gly 275 gtc Val gac Asp aat Asn ctg Leu ggt Gly 355 gcc | Met 260 tgt Cys acc Thr acc Thr ttg Leu gtg Val 340 gac Asp | yal gcc Ala tgg Trp gtc Val gag Glu 325 gas ptg Val | Ile ccc Pro gag Glu ctg Leu 310 aag Lys tcc Ser gtg Val | tcg ser gac Asp 295 tgg Trp gct Ala cgg Arg gag Glu | His cgg Arg 280 agc Ser gcc Ala ggg Gly gaa Glu ggg Gly 360 gtg | Met 265 gtc Val acc Thr ata Ile gta Val GC Ala 345 Cgg Arg | agg acc Thr ggt Gly gat Asp 330 acc Thr | ser agg agg agg agg agg agg agg agg agg ag | aag Lys 300 gtc Val agc Ser gtg Leu | Gly cct Pro 285 gag Glu cca Pro cco Pro aca Thr 365 | Thr 270 gat Asp gac As | 86791596310111059 |

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TIME: 14:12:30

Input Set : A:\55871965.app Output Set: N:\CRF3\11142001\1830706.raw 134 375 136 tee tea gat etg atg gae tac gae aat gtt eec acg ace gte tte ace 1203 137 Ser Ser Asp Leu Met Asp Tyr Asp Asn Val Pro Thr Thr Val Phe Thr 138 385 390 140 cca ctg gag tat ggc tgt gtg ggg ctg tcc gag gag gag gca gtg gct 141 Pro Leu Glu Tyr Gly Cys Val Gly Leu Ser Glu Glu Glu Ala Val Ala 405 1299 144 cgc cac ggg cag gag cat gtt gag gtc tat cac gcc cat tat aaa cca 145 Arg His Gly Gln Glu His Val Glu Val Tyr His Ala His Tyr Lys Pro 425 420 148 ctg gag ttc acg gtg gct gga cga gat gca tcc cag tgt tat gta aag 1347 149 Leu Glu Phe Thr Val Ala Gly Arg Asp Ala Ser Gln Cys Tyr Val Lys **150** 435 440 🚇 152 atg gtg tgc ctg agg gag ccc cca cag ctg gtg ctg ggc ctg cat ttc 1395 🗎 153 Met Val Cys Leu Arg Glu Pro Pro Gln Leu Val Leu Gly Leu His Phe 455 450 🗂 156 ctt ggc ccc aac gca ggc gaa gtt act caa gga ttt gct ctg ggg atc 1443 157 Leu Gly Pro Asn Ala Gly Glu Val Thr Gln Gly Phe Ala Leu Gly Ile 470 465 160 aag tgt ggg gct tcc tat gcg cag gtg atg cgg acc gtg ggt atc cat 1491 161 Lys Cys Gly Ala Ser Tyr Ala Gln Val Met Arg Thr Val Gly Ile His 480 485 490 📮 164 ccc aca tgc tct gag gag gta gtc aag ctg cgc atc tcc aag cgc tca 1539 🟥 165 Pro Thr Cys Ser Glu Glu Val Val Lys Leu Arg Ile Ser Lys Arg Ser 500 505 🚉 168 ggc ctg gac ccc acg gtg aca ggc tgc 🏣 ggg taagcgccat ccctgcaggc 1592 W-->=169 Gly Leu Asp Pro Thr Val Thr Gly Cys(Xaa)Gly 529 515 172 cagggcacae ggtgcgcccg ccgccagctc ctcggaggcc agacccagga tggctgcagg 1652 174 ccaggtttgg ggggcctcaa ccctctcctg gagcgcctgt gagatggtca gcgtggagcg 1712 176 caagtgctgg acgggtggcc cgtgtgcccc acagggatgg ctcaggggac tgtccacctc 1772 178 acccctgcac ctttcagcct ttgccgccgg gcaccccccc caggctcctg gtgccggatg 1832 180 atgacgaect gggtggaaac ctaccetgtg ggeacceatg teegageece etggeattte 1892 1959 184 aaaaaaa 187 <210> SEQ ID NO: 2 188 <211> LENGTH: 521 189 <212> TYPE: PRT 190 <213> ORGANISM: Homo sapiens 192 <220> FEATURE: 193 <221> NAME/KEY: MOD_RES 194 <222> LOCATION: (520) 195 <223> OTHER INFORMATION: Selenocysteine 197 <400> SEQUENCE: 2 198 Met Ala Val Ala Leu Arg Gly Leu Gly Gly Arg Phe Arg Trp Arg Thr 199 10

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25

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/830,706

20



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| 205 | | | 35 | | | | | 40 | | | | | 45 | | | |
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| 210 | Val | Asp | Tyr | Val | Glu | Pro | Ser | Pro | Gln | Gly | Thr | Arg | Trp | Gly | Leu | Gly |
| 211 | | - | - | | | 70 | | | | - | 75 | - | | _ | | 80 |
| 213 | Gly | Thr | Cvs | Val | Asn | Val | Glv | Cvs | Ile | Pro | Lvs | Lvs | Leu | Met | His | Gln |
| 214 | 1 | | - 1 | | 85 | | | . 4 | | 90 | 1 | 1 | | | 95 | |
| | Ala | Ala | Leu | Leu | Glv | Glv | Leu | Ile | Gln | Asp | Ala | Pro | Asn | Tvr | Glv | Trp |
| 217 | | | | 100 | 1 | 1 | | | 105 | | | | | 110 | 1 | 1 |
| | Glu | Val | Ala | | Pro | Val | Pro | His | | Trp | Ara | Lvs | Met | | Glu | Ala |
| 220 | | | 115 | | | | | 120 | F | r | 5 | -1- | 125 | | | |
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| = 223 | , | 130 | | | | | 135 | | | | 0-1 | 140 | 5 | | | |
| | Gln | | Ara | Lvs | Va 1 | Lvs | | Phe | Asn | Tle | Lvs | | Ser | Phe | Va1 | Asp |
| ~~~ | 1 4 5 | | | | | 150 | | | | | 155 | | | | | 100 |
| 228 11 228 | Glu | His | Thr | Va 1 | Cvc | Glv | Va 1 | Δla | T.v.c | Glv | Glv | Lvs | Glu | Tle | T.eu | T.eu |
| ₩ 229 | Olu | 1113 | T 11T | vuı | 165 | 011 | Vul | niu | цу | 170 | OI, | цуз | JIU | 110 | 175 | пси |
| 223 231 | Sor | λla | Acn | Wie | | T1a | Tlo | λla | Thr | | C1v | λνα | Dro | Δra | | Dro |
| 231 | 261 | ніа | ASP | 180 | 116 | 116 | TIE | нта | 185 | СТА | СТУ | нту | FIU | 190 | тут | FIO |
| | Thr | II a | т1. | | C1., | 7.1 ~ | T OU | C1., | | C1** | T10 | Пhъ | Con | | 7 an | т1 о |
| | 1111 | птѕ | 195 | GIU | СТУ | АТа | ьeu | 200 | тут | СТУ | ire | 1111 | 205 | ASP | ASP | тте |
| 了 235 | Dha | (T) | - | T | a 1 | C | D=== | | T | mh | T | 17a l | | c1 | x 1 a | Com |
| | Phe | | ьeu | гуѕ | GIU | ser | | СТУ | пуѕ | TIIT | ьeu | | Val | СТУ | Ата | ser |
| = 238 | m | 210 | 7:1 m | T | 61 | a | 215 | ~1 | Dha | T | шьм | 220 | T1. | 01 | T 0 | 3 |
| T 240 | Tyr | Val | Ald | Leu | GIU | _ | Ата | GIY | Pne | ьeu | | GIY | тте | GIY | Leu | _ |
| 240 241 | 223 | m L | T1_ | 36-4 | 1/_L | 230 | O | T1_ | D | T | 235 | 61 | Dha | 7 | C1 = | 240 |
| = 243 244 | THE | THE | TTE | мес | | Arg | ser | тте | PLO | | Arg | СТА | Phe | ASP | | GIII |
| | 16-4 | 0 | a | 1/ | 245 | T1_ | a 1 | 77.5 - | 24-4 | 250 | O | 77.5 ~ | 01 | mb | 255 | Dha |
| ⊒246 ⇒247 | мес | ser | ser | | Val | тте | Glu | HIS | 265 | Ата | ser | HIS | СТУ | | AIG | Pile |
| | T 0 | 3 | ~1 | 260 | 7 l a | D=0 | C | 7 | | 7 mm | 7 | T 0 | Dwo | 270 | 61 | C1 n |
| | Leu | Arg | | Cys | Ald | PLO | ser | | Val | Arg | Arg | Leu | | ASP | GIY | GIII |
| 250 | т | <i>a</i> 1 = | 275 | mh | m | 61 | 7 | 280 | mb.~ | m h so | <i>a</i> 1 | T 0 | 285 | 7.00 | mh m | C1 |
| | Leu | | Val | 1111 | ттр | GIU | | ser | TIIT | TIIT | СТА | | GIU | ASP | 1111 | GIY |
| 253 | mb | 290 | 3 | mb | 17.0 1 | T | 295 | 71. | т1. | a 1 | 3 | 300 | Dma | 3 an | mh m | 7 m ~ |
| | Thr | Pne | ASP | THE | vai | | ттр | Ala | TTE | СТА | | Val | PIO | ASP | THI | |
| | 305 | T | 3 | T | 61 | 310 | » l » | 61 | **- 1 | | 315 | | D | 3 | mh | 320 |
| | Ser | Leu | ASII | Leu | | гаг | Ата | GIY | vaı | | THE | ser | Pro | ASP | | GIII |
| 259 | T | -1 - | T | 37- 3 | 325 | O | N | a 1 | » 1 - | 330 | a | 17- 1 | D | TT 2 | 335 | |
| | Lys | rre | Leu | | ASP | ser | Arg | GIU | | Thr | ser | val | PIO | | rre | TYL |
| 262 | | -1- | 01 | 340 | **- 1 | **- 1 | a 1 | 01 | 345 | n | a 1 | . | m 1 | 350 | m1 | 23- |
| | Ala | ire | | Asp | vaı | vaı | GIU | | Arg | Pro | GIU | Leu | | Pro | Thr | Ата |
| 265 | | | 355 | -1 | _ | _ | _ | 360 | ~ 3 | _ | _ | -1 | 365 | | _ | . |
| | Ile | | Ala | GIĄ | Arg | Leu | | vai | GIn | Arg | Leu | | GTĀ | GIĀ | ser | ser |
| 268 | _ | 370 | | _ | _ | _ | 375 | | _ ' | | _, | 380 | _, | _, | | _ |
| | Asp | Leu | мet | Asp | Tyr | | Asn | val | Pro | Thr | | val | Pne | Thr | Pro | |
| | 385 | _ | ~ 3 | _ | | 390 | _ | _ | ~ 1 | | 395 | | | | _ | 400 |
| | Glu | Tyr | GТУ | Cys | | GLY | Leu | Ser | GLu | | GLu | Ala | val | Ala | | His |
| 274 | | -1 | a 3 | • | 405 | ~ 7 | | _ | | 410 | • | _ | _ | _ | 415 | a 1 |
| | Gly | Gln | Glu | | Val | G1u | Val | Tyr | | Ala | His | Tyr | ĹУS | | Leu | GLu |
| 277 | | | | 420 | | | | | 425 | | | | | 430 | | |



RAW SEQUENCE LISTING DATE: 11/14/2001 PATENT APPLICATION: US/09/830,706 TIME: 14:12:30

Input Set : A:\55871965.app

Output Set: N:\CRF3\11142001\I830706.raw

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279 Phe Thr Val Ala Gly Arg Asp Ala Ser Gln Cys Tyr Val Lys Met Val
     280
     282 Cys Leu Arg Glu Pro Pro Gln Leu Val Leu Gly Leu His Phe Leu Gly
             450
                                 455
     285 Pro Asn Ala Gly Glu Val Thr Gln Gly Phe Ala Leu Gly Ile Lys Cys
                                                  475
     288 Gly Ala Ser Tyr Ala Gln Val Met Arg Thr Val Gly Ile His Pro Thr
     289
                         485
                                              490
     291 Cys Ser Glu Glu Val Val Lys Leu Arg Ile Ser Lys Arg Ser Gly Leu
     292
                                          505
                     500
W--> 294 Asp Pro Thr Val Thr Gly Cys/Xaa
                                         Gly
     295
                 515
     298 <210> SEQ ID NO: 3
    299 <211> LENGTH: 2056
  300 <212> TYPE: DNA
  🕮 301 <213> ORGANISM: Homo sapiens
  303 <220> FEATURE:
  304 <221> NAME/KEY: CDS
   👊 305 <222> LOCATION: (188)..(1669)
    307 <220> FEATURE:
     308 <221> NAME/KEY: MOD_RES
     309 <222> LOCATION: (493)
  1 310 <223> OTHER INFORMATION: Selenocysteine
  312 <400> SEQUENCE: 3
  🕮 313 gtcccggacc tcaggcccag ttcagtgtac ttcccctctc tacttcctcc ctccagtccc 60
   📮 315 ttetecatee etecettttt tggetgeeee ttgeetgeet teetegeeag tagettgeag 120
   📲317 agtagacacg atgacacett ttgcaggeta aaaaggetga gagtggcact atgtgcagtg 180
   〒319 agccacc atg gag gac caa gca ggt cag cgg gac tat gat ctc ctg gtg
   <u>≟</u>320
                 Met Glu Asp Gln Ala Gly Gln Arg Asp Tyr Asp Leu Leu Val
    321
                                                                            277
    323 gtc ggc ggg gga tct ggt ggc ctg gct tgt gcc aag gag gcc gcc cag
    324 Val Gly Gly Gly Ser Gly Gly Leu Ala Cys Ala Lys Glu Ala Ala Gln
                                                                            325
     327 ctg gga agg aag gtg gcc gtg gtg gac tac gtg gaa cct tct ccc caa
     328 Leu Gly Arg Lys Val Ala Val Val Asp Tyr Val Glu Pro Ser Pro Gln
                          35
                                              40
    331 ggc acc egg tgg ggc etc ggc ggc acc tgc gtc aac gtg ggc tgc atc
                                                                            373
    332 Gly Thr Arg Trp Gly Leu Gly Gly Thr Cys Val Asn Val Gly Cys Ile
    333
                      50
                                          55
                                                                            421
    335 ccc aag aag ctg atg cac cag gcg gca ctg ctg gga ggc ctg atc caa
    336 Pro Lys Lys Leu Met His Gln Ala Ala Leu Leu Gly Gly Leu Ile Gln
    339 gat gcc ccc aac tat ggc tgg gag gtg gcc cag ccc gtg ccg cat gac
                                                                            469
    340 Asp Ala Pro Asn Tyr Gly Trp Glu Val Ala Gln Pro Val Pro His Asp
    341
              80
                                                                            517
    343 tgg agg aag atg gca gaa gct gtt caa aat cac gtg aaa tcc ttg aac
    344 Trp Arg Lys Met Ala Glu Ala Val Gln Asn His Val Lys Ser Leu Asn
                             100
                                                                            565
    347 tgg ggc cac cgt gtc cag ctt cag gac aga aaa gtc aag tac ttt aac
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VERIFICATION SUMMARY

PATENT APPLICATION: US/09/830,706

DATE: 11/14/2001 TIME: 14:12:31

Input Set : A:\55871965.app

Output Set: N:\CRF3\11142001\1830706.raw

L:169 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 L:294 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 L:440 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 L:559 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 L:2002 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:37 L:3285 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:38